

- [54] **AGGLOMERATION APPARATUS**  
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|-----------|---------|----------------------|
| 3,652,293 | 3/1972  | Lombana et al. .     |
| 3,695,165 | 10/1972 | Sienkiewicz et al. . |
| 3,716,373 | 2/1973  | Rhodes et al. .      |
| 3,727,839 | 4/1973  | Marsh .              |
| 3,804,963 | 4/1974  | Sienkiewicz et al. . |
| 3,947,166 | 3/1976  | Kleemann et al. .    |

## FOREIGN PATENT DOCUMENTS

- |         |        |                  |
|---------|--------|------------------|
| 1111366 | 4/1968 | United Kingdom . |
| 1267930 | 3/1972 | United Kingdom . |

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[57] **ABSTRACT**

A pulverulent, water-soluble material is agglomerated by projecting the material in a stream through a moistening zone. Means are provided for directing an aqueous gas towards the stream of particulate material in the moistening zone so that the stream of particulate material is surrounded by and confined throughout its path of travel through the moistening chamber as particles of the particulate material are moistened and fused, and means are provided for drying the material. Means are also provided for feeding a cooling gas and/or a stream of steam adjacent to and about the periphery of the stream of material.

**16 Claims, 5 Drawing Figures**

### Related U.S. Application Data

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- [58] Field of Search ..... 426/285, 456; 425/222,  
425/7, 10; 34/174, 12, 13, 65, 225, 233

## References Cited

## U.S. PATENT DOCUMENTS

- |           |         |                      |
|-----------|---------|----------------------|
| 2,893,871 | 7/1959  | Griffin .            |
| 2,977,203 | 3/1961  | Sienkiewicz et al. . |
| 2,995,773 | 8/1961  | Gidlow et al. .      |
| 3,143,428 | 8/1964  | Reimers et al. .     |
| 3,212,908 | 10/1965 | Childs et al. .      |
| 3,424,589 | 1/1969  | Kan et al. .         |
| 3,485,637 | 12/1969 | Adler et al. .       |
| 3,554,760 | 1/1971  | Sienkiewicz et al. . |
| 3,622,081 | 11/1971 | Marsh .              |

